What is claimed is:

8. A communication system comprising a radio transmitter transmitting a signal which is interfered with by fixed reflectors and moving reflectors, said system comprising an antenna, a receiver and a multipath reduction subsystem comprising an analog to digital converter, a real to complex converter, a whitening filter with complex coefficients and a multipath canceller comprising an array of complex delay-Doppler shift coefficients, delayers of one sample and shifters of one frequency increment, said array producing a residual from which the interferences from said fixed reflectors and said moving reflectors have been removed, said multipath canceller comprising a minimizer minimizing the mean square of said residual over the said whitening filter coefficients and the said multipath canceller delay-Doppler coefficients, said subsystem comprising a spectrum restoring filter utilizing the said whitening filter coefficients restoring said original signal.

9. A multipath reduction subsystem for use in a communication system comprising a radio transmitter transmitting a signal which is interfered with by fixed reflectors and moving reflectors, said system comprising an antenna, a receiver and said multipath reduction subsystem comprising an analog to digital converter, a real to complex converter, a whitening filter with complex coefficients and a multipath canceller comprising an array of complex delay-Doppler shift coefficients, delayers of one sample and shifters of one frequency increment, said array producing a residual from which the interferences from said fixed reflectors and said moving reflectors have been removed, said multipath canceller comprising a minimizer minimizing the mean square of said residual over the said whitening filter coefficients and the said multipath canceller delay-Doppler coefficients, said subsystem comprising a spectrum restoring filter utilizing the said whitening filter coefficients restoring said original signal.

10. A multipath reduction method for use in a communication system comprising a radio transmitter transmitting a signal which is interfered with by fixed reflectors and moving reflectors, said system comprising an antenna, a receiver and an analog to digital converter, said multipath reduction method comprising reducing multipath by converting real sampled data to complex sampled data, whitening said complex sampled data by filtering with complex coefficients and cancelling said multipath by delaying and frequency shifting the residual under control of the complex delay-Doppler shift coefficients producing said residual from which the interferences from said fixed reflectors and said moving reflectors have been removed, said whitening filtering coefficients and said multipath cancelling delay-Doppler shift coefficients being determined by minimizing the mean square of said residual, said multipath reduction method comprising restoring the spectrum of said signal by filtering utilizing the said whitening filtering coefficients to restore said signal.

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11. A surveillance system with targets which are moving reflectors, with interfering fixed reflectors and with interfering moving reflectors, said system comprising one or more stationary or moving transmitters, one or more stationary or moving antennas, one or more receivers and a surveillance subsystem comprising a multipath reduction subsystem for each receiver, said multipath reduction subsystem comprising an analog to digital converter, a real to complex converter, a whitening filter with complex coefficients and a multipath canceller comprising an array of complex delay-Doppler shift coefficients, delayers of one sample and shifters of one frequency increment, said array producing a residual from which the interferences from said fixed reflectors, said moving reflectors and said targets have been removed, said multipath canceller comprising a minimizer minimizing the mean square of said residual over the said whitening filter coefficients and the said multipath canceller delay-Doppler coefficients, said surveillance subsystem comprising, for each receiver, a target measurer giving differential range and differential range rate from said delay-Doppler coefficients, said target measurer, if more than one antenna is provided, giving target angle from the relative phases of said complex delay-Doppler coefficients, said surveillance subsystem comprising a target tracker utilizing the said measured differential range, said differential range rate, said angle and the position and velocity of the platform on which said antennas are mounted, said position and said velocity being determined by a navigation subsystem, said tracker locating and tracking said target or targets.

12. A surveillance subsystem for use in a surveillance system with targets which are moving reflectors, with interfering fixed reflectors and with interfering moving reflectors, said system comprising one or more stationary or moving transmitters, one or more stationary or moving antennas and one or more receivers, said surveillance subsystem comprising a multipath reduction subsystem for each receiver, said multipath reduction subsystem comprising an analog to digital converter, a real to complex converter, a whitening filter with complex coefficients and a multipath canceller comprising an array of complex delay-Doppler shift coefficients, delayers of one sample and shifters of one frequency increment, said array producing a residual from which the interferences from said fixed reflectors, said moving reflectors and said targets have been removed, said multipath canceller comprising a minimizer minimizing the mean square of said residual over the said whitening filter coefficients and the said multipath canceller delay-Doppler coefficients, said surveillance subsystem comprising, for each receiver, a target measurer giving differential range and differential range rate from said delay-Doppler coefficients, said target measurer, if more than one antenna is provided, giving target angle from the relative phases of said complex delay-Doppler coefficients, said surveillance subsystem comprising a target tracker utilizing the said measured differential range, said differential range rate, said angle and the position and velocity of the platform on which said antennas are mounted, said position and said velocity being determined by a navigation subsystem, said tracker locating and tracking said target or targets.

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13. A surveillance method for use in a surveillance system with targets which are moving reflectors, with interfering fixed reflectors and with interfering moving reflectors, said system comprising one or more stationary or moving transmitters, one or more stationary or moving antennas, one or more receivers each with an analog to digital converter, said surveillance method comprising reducing multipath for each receiver, by converting real sampled data to complex sampled data, whitening said complex sampled data by filtering with complex coefficients and cancelling said multipath by delaying and frequency shifting the residual under control of the complex delay-Doppler shift coefficients producing said residual from which the interferences from said fixed reflectors, said moving reflectors and said targets have been removed, said whitening filtering coefficients and said multipath cancelling delay-Doppler shift coefficients being determined by minimizing the mean square of said residual, said surveillance method comprising, for each receiver, measuring said target or targets by obtaining differential range and differential range rate from said delay-Doppler shift coefficients, and if more than one antenna is provided, obtaining target angle from the relative phases of said complex delay-Doppler shift coefficients, said surveillance method comprising locating and tracking said target or targets utilizing the said measured differential range, said differential range rate, said angle and the position and velocity of the platform on which said antennas are mounted, said position and said velocity being determined by a navigation subsystem.